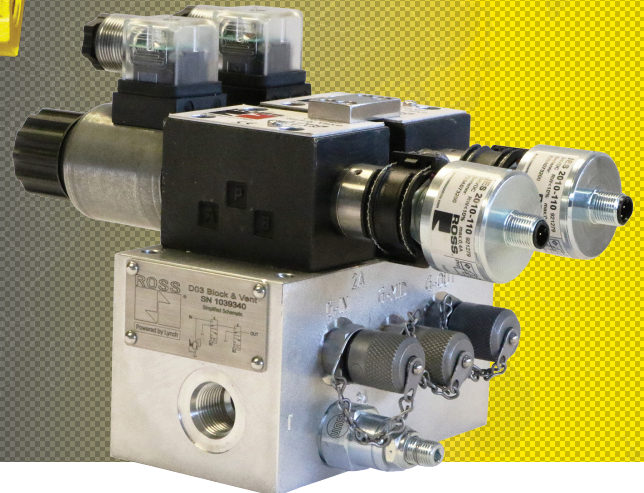
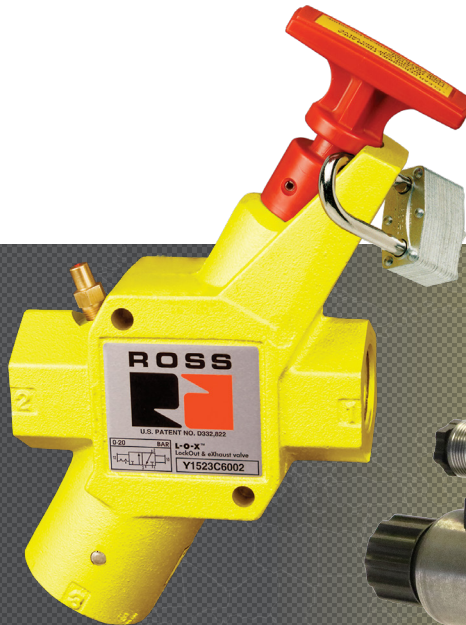


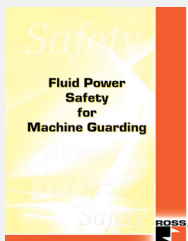


FLUID POWER SAFETY PRODUCTS & SOLUTIONS



ROSS CONTROLS

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SAFETY INFORMATION

Fluid Power Safety for Machine Guarding Book

Overview of topics related to the safe application of fluid power in industrial applications – Topics include Control Integrity, Control Categories, Lockout-Tagout, Alternative Lockout-Tagout, Risk Assessment, Risk Assessment as Related to Fluid Power, Clutch/Brake Controls for Mechanical Stamping Presses, Understanding the Function of Counterbalance on Mechanical Stamping Presses, and FAQ's.

Fluid Power Safety Risk Locator Program (available upon request) – Provides guidance to areas of possible safety concerns for closer examination.



SAFETY TRAINING PROGRAM

Total Machine Safety is the first fully-integrated electrical and fluid power machine safeguarding training program.

A comprehensive approach evaluating and designing safety controls systems is critical in the overall success of a safety program. Discussion of global and local standards, risk assessment, and safety control system requirements is bolstered by the inclusion of pneumatic and hydraulic risks and risk reduction.

Visit ROSS' website at rosscontrols.com for more information and scheduled seminars.

ROSS SAFETY PRODUCT DATA for SISTEMA LIBRARY USERS

Safety product data library is designed for use with the innovative new Safety Integrity Software Tool for the Evaluation of Machine Applications (SISTEMA). Developed by the Institute for Occupational Safety and Health of the German Social Accident Insurance (IFA, formerly known as the BGIA), SISTEMA is available to download for no charge at the IFA web site. This software tool is expected to prove invaluable to system designers because of its potential time savings and safety implications. The free software tool and data library will help ensure compliance with the EN ISO 13849-1:2015 standard.

The ROSS DM²⁰ Series safety products meet all global requirements for machine safety and are commonly used for exhausting the downstream air to help meet stop-time requirements in machine guarding applications.

To download a copy of ROSS' Safety Product Data for the SISTEMA Library, visit the [Safety Industry page \(SISTEMA Library with ROSS' Safety Products\)](#) at rosscontrols.com.

The **Lockout L-O-X®** valve is used to block the supply and remove the downstream pressure from the circuit or machine and allow the employee to lockout the pneumatic energy for safe machine access.
The **Soft-Start EEZ-ON®** valve provides gradual re-application of pneumatic energy to prevent rapid equipment movement at startup.

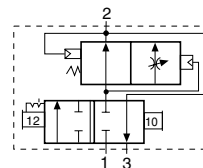
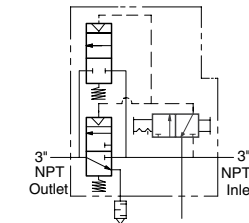
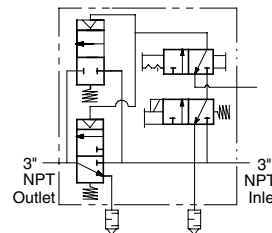
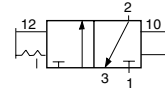
- Lockable only in the OFF position
- Has a full size exhaust port (equal to or larger than supply)
- Simple push/pull of the large handle provides positive direct manual operation
- Fluorocarbon slipper seals for easy shifting, even after long periods of inactivity
- Integrated sensing port for pressure verification or visual indicator option

3/2 Manual Lockout L-O-X® Valves						
Valve Style	Port Size		Valve Model Number		C _v	
	1, 2	3	G Threads	NPT Threads	1-2	2-3
Slim-Line	1/4	3/8	YD1523D2002	Y1523D2002	1.84	1.79
	3/8	3/8	YD1523D3012	Y1523D3012	2.67	2.64
Classic	3/8	3/4	YD1523C3002	Y1523C3002	4.74	3.57
	1/2	3/4	YD1523C4002	Y1523C4002	7.10	4.00
	3/4	3/4	YD1523C5012	Y1523C5012	8.26	4.10
	3/4	1¼	YD1523C5002	Y1523C5002	13.12	8.98
	1	1¼	YD1523C6002	Y1523C6002	16.56	9.52
	1¼	1¼	YD1523C7012	Y1523C7012	19.25	9.74
High-Capacity	1½	2	YD1523C8002	Y1523C8002	35.53	50.98
	2	2	YD1523C9012	Y1523C9012	40.38	52.23
Stainless Steel Classic	1/4	1/4	D1523B2004	1523B2004	2.14	2.08
	3/8	1/2	D1523B3004	1523B3004	5.79	6.24
	1/2	1/2	D1523B4004	1523B4004	5.79	6.24
	3/4	1	D1523B5004	1523B5004	14.30	17.00
	1	1	D1523B6004	1523B6004	14.30	17.00
	1½	2	D1523B8004	1523B8004	39.00	45.00
2	2	D1523B9004	1523B9004	39.00	45.00	

3/2 Manual Lockout L-O-X® Valves Manual Pilot Operated					
Valve Style	Port Size		Valve Model Number	C _v	
	1, 2	3	NPT Threads	1-2	2-3
Solenoid Pilot Controlled	3	2½	Y3900A0896W	140	71
Pressure Controlled	3	2½	Y3900A0829	140	71

*Voltage: 24 volts DC. For 110-120 volts AC, 50/60 Hz, replace "W" with a "Z", e.g., Y3900A0896Z. For other voltages, consult ROSS.

3/2 Manual Lockout L-O-X® Valves with Soft-Start EEZ-ON®						
Valve Style	Port Size		Valve Model Number		C _v	
	1, 2	3	G Threads	NPT Threads	1-2	2-3
Classic	3/8	3/4	YD1523B3102	Y1523B3102	3.64	2.81
	1/2	3/4	YD1523B4102	Y1523B4102	4.86	3.51
	3/4	3/4	YD1523B5112	Y1523B5112	5.09	2.91
	3/4	1¼	YD1523B5102	Y1523B5102	10.08	8.56
	1	1¼	YD1523B6102	Y1523B6102	11.07	8.45
	1¼	1¼	YD1523B7112	Y1523B7112	11.86	8.46



Accessories & Options see page 23 & 24.

Energy Isolation Piloted Valves with Lockout or Lockout with Soft-Start



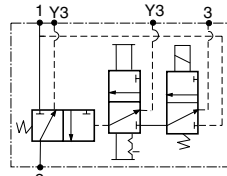
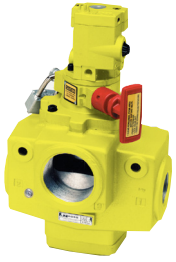
**Cat. 1
PL b**

The **Lockout L-O-X®** valve is used to block the supply and remove the downstream pressure from the circuit or machine and allow the employee to lockout the pneumatic energy for safe machine access.

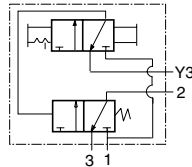
The **Soft-Start EEZ-ON®** valve provides gradual re-application of pneumatic energy to prevent rapid equipment movement at startup.

(Solenoid models only)

- Lockable only in the OFF position
- Gradual re-application of pneumatic pressure prevents rapid equipment movement at startup
- Has a full size exhaust port (equal to or larger than supply)
- Simple push/pull of the large handle provides positive direct manual operation
- Integrated sensing port for pressure verification or visual indicator option

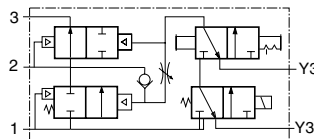


Solenoid Pilot Controlled

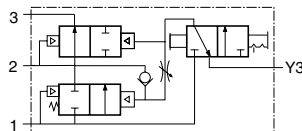


Pressure Controlled

After energy isolation has been completed the rapid introduction of high pressure can cause motion and unnecessary machine wear or damage. The L-O-X® valve with soft-start EEZ-ON® function features all the advantages of the L-O-X® with the added benefit of causing the pressure to increase gradually allowing for a controlled motion to occur.



Solenoid Pilot Controlled



Pressure Controlled

3/2 Piloted Valves with Manual Lockout L-O-X® Control						
Valve Style	Port Size		Valve Model Number		C _v	
	1, 2	3	G Threads	NPT Threads	1-2	2-3
Solenoid Pilot Controlled*	1/4	1/2	YD2773A2072W	Y2773A2072W	2.5	3.1
	3/8	1/2	YD2773A3072W	Y2773A3072W	3.6	5.3
	1/2	1/2	YD2773A4082W	Y2773A4082W	3.3	5.3
	1/2	1	YD2773A4072W	Y2773A4072W	6.3	9.2
	3/4	1	YD2773A5072W	Y2773A5072W	7.7	11
	1	1	YD2773A6082W	Y2773A6082W	8.0	12
	1	1 1/2	YD2773A6072W	Y2773A6072W	23	34
	1 1/4	1 1/2	YD2773A7072W	Y2773A7072W	30	32
	1 1/2	1 1/2	YD2773A8082W	Y2773A8082W	30	31
	1 1/2	2 1/2	YD2773A8072W	Y2773A8072W	68	70
	2	2 1/2	YD2773A9072W	Y2773A9072W	70	70
	2 1/2	2 1/2	YD2773A9082W	Y2773A9082W	70	71
Pressure Controlled	1	1 1/2	YD2783A6006	Y2783A6006	23	34
	1 1/4	1 1/2	YD2783A7006	Y2783A7006	30	32
	1 1/2	1 1/2	YD2783A8016	Y2783A8016	30	31
	1 1/2	2 1/2	YD2783A8006	Y2783A8006	68	70
	2	2 1/2	YD2783A9006	Y2783A9006	70	70
	2 1/2	2 1/2	YD2783A9016	Y2783A9016	70	71

3/2 Piloted Valves with Manual Lockout L-O-X® with Soft-Start Control Function							
Valve Style	Port Size		Valve Model Number		C _v		
	1, 2	3	G Threads	NPT Threads	1-2	2-3	
Solenoid Pilot Controlled*	1/4	1/2	YD2773B2075W	Y2773B2075W	2.5	3.1	
	3/8	1/2	YD2773B3075W	Y2773B3075W	3.6	5.3	
	1/2	1/2	YD2773B4085W	Y2773B4085W	3.3	5.3	
	1/2	1	YD2773B4075W	Y2773B4075W	6.3	9.2	
	3/4	1	YD2773B5075W	Y2773B5075W	7.7	11	
	1	1	YD2773B6085W	Y2773B6085W	8.0	12	
	1	1 1/2	YD2773B6075W	Y2773B6075W	23	34	
	1 1/4	1 1/2	YD2773B7075W	Y2773B7075W	30	32	
	1 1/2	1 1/2	YD2773B8085W	Y2773B8085W	30	31	
	Pressure Controlled	1/4	1/2	YD2783B2055	Y2783B2055	2.5	3.1
		3/8	1/2	YD2783B3055	Y2783B3055	3.6	5.3
		1/2	1/2	YD2783B4065	Y2783B4065	3.3	5.3
1/2		1	YD2783B4055	Y2783B4055	10.0	13.0	
3/4		1	YD2783B5055	Y2783B5055	12.0	15.0	
1		1	YD2783B6065	Y2783B6065	12.0	16.0	
1		1 1/2	YD2783A6055	Y2783A6055	23.0	34.0	
1 1/4		1 1/2	YD2783A7055	Y2783A7055	30.0	32.0	
1 1/2	1 1/2	YD2783A8065	Y2783A8065	30.0	31.0		

*Voltage: 24 volts DC. For 110-120 volts AC, 50/60 Hz, replace "W" with a "Z", e.g., YD2773A2072Z. For other voltages, consult ROSS.

Accessories & Options see page 23 & 24.

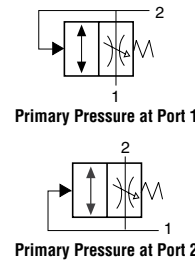
Soft-Start EEZ-ON® valve provides gradual re-application of pneumatic energy to prevent rapid equipment movement at startup.

Right-Angle Soft-Start EEZ-ON® Valves – 19 Series

- » Right angle style mounts directly in cylinder ports
- » Available with threaded ports or push-in-tubing ports
- » Point of use Soft-Start

2/2 Soft-Start EEZ-ON® Valves					
Valve Style	Port Size*		Valve Model Number		Avg. C _v
	1	2	G Threads	NPT Threads	
Right-Angle with Threaded Banjo	1/4	1/4	D1969B2010	1969B2010	1.2
	3/8	3/8	D1969B3010	1969B3010	1.7

* Port 1 with female threads, port 2 with male threads.

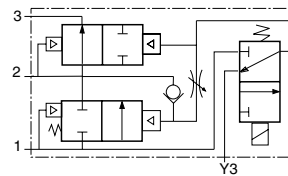


Soft-Start EEZ-ON® Valves – 27 Series

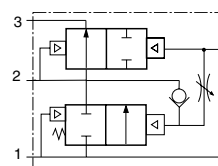
- » Large exhaust port exceeds inlet size for rapid release of pressure
- » Solenoid pilot or pressure controlled

3/2 Soft-Start EEZ-ON® Valves						
Valve Style	Port Size		Valve Model Number		C _v	
	1, 2	3	G Threads	NPT Threads	1-2	2-3
Solenoid Pilot Controlled*	1/4	1/2	D2773B2037W	2773B2037W	2.5	3.1
	3/8	1/2	D2773B3037W	2773B3037W	3.6	5.3
	1/2	1/2	D2773B4047W	2773B4047W	3.3	5.3
	1/2	1	D2773B4037W	2773B4037W	10.0	13.0
	3/4	1	D2773B5037W	2773B5037W	12.0	15.0
	1	1	D2773B6047W	2773B6047W	12.0	16.0
	1	1½	D2773A6037W	2773A6037W	23.0	34.0
	1¼	1½	D2773A7037W	2773A7037W	30.0	32.0
	1½	1½	D2773A8047W	2773A8047W	30.0	31.0
Pressure Controlled	1/4	1/2	D2783C2037	2783C2037	2.5	3.1
	3/8	1/2	D2783C3037	2783C3037	3.6	5.3
	1/2	1/2	D2783C4047	2783C4047	3.3	5.3
	1/2	1	D2783C4037	2783C4037	10.0	13.0
	3/4	1	D2783C5037	2783C5037	12.0	15.0
	1	1	D2783C6047	2783C6047	12.0	16.0
	1	1½	D2783B6037	2783B6037	23.0	34.0
	1¼	1½	D2783B7037	2783B7037	30.0	32.0
	1½	1½	D2783B8047	2783B8047	30.0	31.0

* Voltage: 24 volts DC. For 110-120 volts AC, 50/60 Hz, replace "W" with a "Z", e.g., D2773B2037Z. For other voltages, consult ROSS.



Solenoid Pilot Controlled



Pressure Controlled



Accessories & Options *see page 24.*

Safety Exhaust (Dump)

Control Reliable Double Valves for External Monitoring



The M35 Series valve is designed to supply air to a zone or entire machine/system until signaled to shut off and exhaust residual downstream pneumatic energy from the machine. Thus, reducing the hazards associated with the presence of residual energy during employee access and/or minor servicing. The safety function of the M35 Series valve is to shut off supply of pneumatic energy and to exhaust any pneumatic energy from downstream of the valve. The function of the optional integrated EEZ-ON® (soft-start) module is to, on energization, allow outlet pressure to increase at a slower than normal rate until it reaches approximately 50% of inlet pressure, at which point the valve will then open fully to finish filling the system at full flow rate.

- Pressure sensors - allows for external monitoring of valve state
- Highly contaminant-tolerant poppet construction
- Modular or threaded port connection - allows modular connection to air entry system (Lockout Valve, FRL)
- Optional EEZ-ON® (soft-start) module - allows slower build-up of pressure during start-up
- LED indicators - aids troubleshooting (power on main solenoids, feedback pressure sensors, and fault/no fault condition)
- Options include built-in silencer or threaded flange for remote exhaust (reduces actuation/de-actuation noise)
- Sistema library data *pending*



These valves are not designed for controlling clutch/brake mechanisms on mechanical power presses.

M35 Series – 3/2 Double Valves with or without EEZ-ON® (Soft-Start) Module



Choose your options (in red) to configure your valve model number.

M35 S 40 G A E X AA G A

Series: M35
Soft-Start Function: With Soft-Start **S**, No Soft-Start **X**
Thread: **G** (G), **N** (NPT)
Monitoring: External
Voltage: 24 volts DC
Communication: None
Revision Level: **A**
Pressure Gauge: With Gauge **G**, No Gauge **X**

Port Size			Exhaust Type		
Inlet	Outlet	Exhaust			
1/2	1/2	-	Built-in Silencer	40	
3/4	3/4	-	Built-in Silencer	50	
1/2	1/2	1	Threaded Exhaust Flange*	46	
3/4	3/4	1	Threaded Exhaust Flange*	56	

* Silencer not included but recommended.

Port Size	Soft Start	Valve with Built-in Silencer		Valve with Threaded Exhaust Flange	
		Cv		Cv	
1/2	With	4.1	7.5	4.1	7.90
	Without	4.3	7.5	4.3	7.90
3/4	With	4.1	7.5	4.1	7.90
	Without	4.3	7.5	4.3	7.90

Pin Configuration Combinations*

Solenoid	Sensor	
A	A	AA
A	B	AB
A	C	AC
C	C	CC
D	B	DB
D	C	DC

* See pinouts below.

Air Entry Assemblies – M35 Series Double Valves, Manual Lockout L-O-X® Valves and FRL's

» Category 4 with Manual L-O-X® and M35 Series valves

Choose your options (in red) to configure your valve model number.

M35 S L R 2U 40 G A E X AA G A

Series: M35
M35 Valve: With Soft-Start **S**, No Soft-Start **X**
Lockout Valve Type: L-O-X®* **L**, Modular L-O-X®* **M**, No L-O-X® **X**
* Silencer Included.
Filter, Regulator, Lubricator: Integrated Filter/Regulator **F**, Filter and Regulator **R**, Filter, Regulator, Lubricator **L**, No Filter, Regulator, Lubricator **X**
Thread: **G** (G), **N** (NPT)
Voltage: 24 volts DC
Communication: None
Monitoring: External
Revision Level: **A**
Pressure Gauge (for M35 valve): With Gauge **G**, No Gauge **X**

Port Size			Exhaust Type		
Inlet	Outlet	Exhaust			
1/2	1/2	-	Built-in Silencer	40	
3/4	3/4	-	Built-in Silencer	50	
1/2	1/2	1	Threaded Exhaust Flange*	46	
3/4	3/4	1	Threaded Exhaust Flange*	56	

* Silencer not included but recommended.

Extra Port (in relation to M35 valve)					
Location	Size	Code	Location	Size	Code
Upstream	1/4	2U	Downstream	1/2	4D
Upstream	3/8	3U	Both	1/4	2B
Upstream	1/2	4U	Both	3/8	3B
Downstream	1/4	2D	Both	1/2	4B
Downstream	3/8	3D	None	NA	XX

Pin Configuration Combinations*

Solenoid	Sensor	
A	A	AA
A	B	AB
A	C	AC
C	C	CC
D	B	DB
D	C	DC

Solenoid Pinouts:

Pressure Sensor Pinouts:

Accessories & Options see page 22 & 23.



Safety Exhaust (Dump) Control Reliable Double Valves with Internal Dynamic Monitoring

The DM¹ & DM^{2®} Series C safety exhaust valves are dual valves used to block the supply and remove the downstream pressure from the circuit or machine. It is integrated into the electrical safety system to remove potentially hazardous energy in order to provide employees safe access to a machine or zone. By quickly removing the pneumatic energy with a safety valve, determined by the risk assessment, the safety system integrity is maintained allowing the employee to complete their tasks and safely and rapidly.

- Status Indicator switch for valve condition (ready to run) feedback
- Highly contaminant-tolerant poppet construction
- Rapid response time to minimize stopping time
- Sistema library data available
- *Explosion proof version available, see page 17*



These valves are not designed for controlling clutch/brake mechanisms on mechanical power presses.

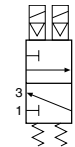
DM¹ & DM^{2®} Series C – 3/2 Double Valves with Dynamic Monitoring

DM¹ Series C – Double Valve with Dynamic Monitoring

- » Self-contained dynamic monitoring system
- » Automatic reset by de-energizing solenoids

DM^{2®} Series C – Double Valve with Dynamic Monitoring and Memory

- » Dynamic monitoring and memory of abnormal function retains lockout condition and this prevents unintentional reset with removal of air or electricity
- » Self-contained dynamic monitoring system requires no additional valve monitoring controls
- » Dedicated Reset Signal Required



DM¹ Series C



DM^{2®} Series C

Choose your options (in red) to configure your valve model number.

DM2C N A 42 A 2 1

Valve Type	Valve Function	
DM	With Monitoring	DM1C
	With Monitoring and Memory	DM2C

Revision Level	Basic Size
4, 8, 12, 30	A
2	B

Status Indicator*	
Yes	1
No/Valve Only (N/A)	X

*Installed in the base.

Other OPTIONS*		
EN 175301-803 Form A (connector not included)	Leave	Blank
M12 (connector included)	005	
Silicone Free with EN 175301-803 Form A (connector not included)	030	
Silicone Free with M12 (connector included)	035	

*See options for connectors or wiring kits.

Thread	
G	D
NPT	N
Valve Only (No Base)	X

Valve Series	Basic Size	Port Size		
		Inlet	Outlet	
DM ¹ or DM ^{2®}	2	1/4	1/4	20
		3/8	3/8	21
	Valve Only (No Base)		2X	
	4	1/2	1/2	42
Valve Only (No Base)		4X		
DM ^{2®}	8	3/4	3/4	54
		1	1	55
	Valve Only (No Base)		5X	
	12	1	1	66
Valve Only (No Base)		6X		
30		1½	2	88
Valve Only (No Base)		8X		

Valve Selection	Reset Type	
DM ¹	Automatic	1
DM ^{2®}	Solenoid	2

Voltage*	
24 volts DC	A
110 volts AC, 50 Hz	B
120 volts AC, 50/60 Hz	

*For other voltages consult ROSS.

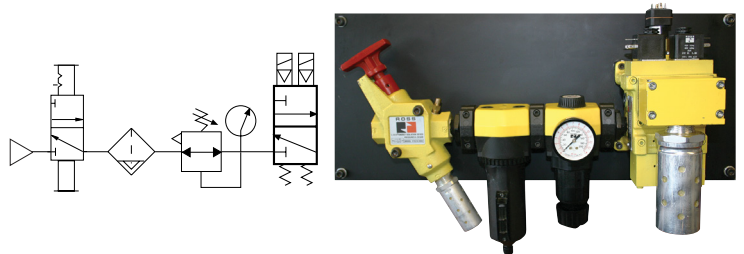
Valve Series	Basic Size	Inlet Port Size	C _v	
			1-2	2-3
DM ¹ or DM ^{2®}	2	1/4	1.67	2.61
		3/8	2.17	3.57
	4	1/2	3.01	6.51
		3/4	4.20	9.36
DM ^{2®}	8	1	4.32	9.36
		12	1	8.68
	30	1½	20.11	55.10

Air Entry Assemblies – DM^{2®} Series C Double Valves, Manual L-O-X[®] Valves and Filter & Regulator

- » Category 4 with Manual L-O-X[®] and DM^{2®} Series C valves

Air Entry Assemblies	Port Size		Model Number*	Air Entry Type	C _v	
	1, 2	3			1-2	2-3
with DM ^{2®} Series C	1/2	1/2	RC408-06W	FR	3	10
	3/4	3/4	RC412-06W	FR	4.4	13
	3/4	3/4	RC412L-06W	FRL	3	10

* NPT pressure port threads. Standard unit supplied with metal bowl and manual drain.
Voltage: 24 volts DC. For 110-120 volts AC, 50/60 Hz, replace "W" with a "Z", e.g., RC408-06Z. M12 connectors available, consult ROSS.



Accessories & Options see page 22 thru 24.

Safety Exhaust (Dump) with or without Energy Isolation – Valves for External Monitoring

Cat. 2
PL c



The SV27 Series Sensing valve uses a safety-rated DPST switch to monitor the valve's operating position. The SV27 3/2 valve can be used for safe shut-off and exhaust functions for Category 2 applications with proper integration and monitoring. The feedback switch informs the controls that the valve internals have shifted properly.

- Electrical feedback via DPST switch (Double-Pole Single-Throw)
- Direct-operated safety-rated switch (DPST)
- Poppet construction for near zero leakage & dirt tolerance
- A diagnostic coverage of 99% for 3/2 valves can be obtained by monitoring the safety switch status
- Integrated sensing port for pressure verification or visual indicator
- Sistema library data available

Safety Exhaust (Dump)

SV27 Series with Sensing – 3/2 Normally Closed Valves

- » Has a full size exhaust port (equal to or larger than supply)

Choose your options (in red) to configure your valve model number.

SV27 **D** **C** **30** **540** **7PS** **AA** **1A**

Series: SV27, Revision Level: D, Function: C, Port Size: 3/2, In-line Mounted

Thread: G **D**, NPT **N**

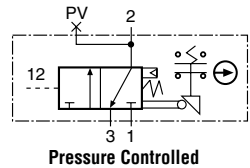
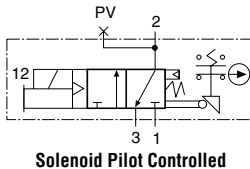
Body Size	Port Size		
	Inlet	Outlet	
3/4	1/2	1/2	540
	3/4	3/4	550
	1	1	560
1 1/4	1	1 1/2	760
	1 1/4	1 1/2	770
	1 1/2	1 1/2	780
	1 1/2	2 1/2	980
2	2	2 1/2	990
	2 1/2	2 1/2	995

Actuation: Solenoid Pilot **7PS**, Pressure Controlled **5AS**

Voltage* (Solenoid Pilot only): 24 volts DC **1D**, 110-120 volts AC, 50/60 Hz **1A**, Pressure Controlled **Leave Blank**

* For other voltages consult ROSS.

Port Size	C _v	
	1, 2	3
1/2	1	6.3
3/4	1	7.7
1	1	8.0
1	1 1/2	23
1 1/4	1 1/2	30
1 1/2	1 1/2	30
1 1/2	2 1/2	68
2	2 1/2	70
2 1/2	2 1/2	70



Safety Exhaust (Dump) with Manual Lockout L-O-X® Function

SV27 Series with Sensing – 3/2 Normally Closed Valves

- » Has a full size exhaust port (equal to or larger than supply)
- » Easily identified by red handle
- » Lockable only in the OFF position
- » Simple push/pull of the large red handle accommodates reduced manual actuation forces and easy operation

**Cat. 2
PL c**
(Solenoid models only)

Choose your options (in red) to configure your valve model number.

SV27 **D** **C** **3L** **540** **7PS** **AA** **1A**

Series: SV27, Revision Level: D, Function: C, Port Size: 3L, In-line Mounted

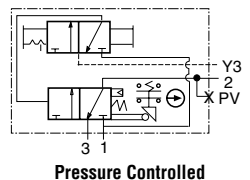
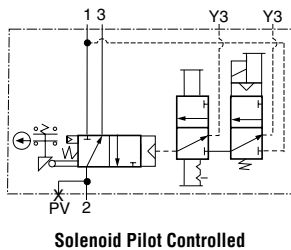
Thread: G **D**, NPT **N**

Body Size	Port Size		
	Inlet	Outlet	
3/4	1/2	1/2	540
	3/4	3/4	550
	1	1	560
1 1/4	1	1 1/2	760
	1 1/4	1 1/2	770
	1 1/2	1 1/2	780
	1 1/2	2 1/2	980

Actuation: Solenoid Pilot **7PS**, Pressure Controlled **5AS**

Voltage* (Solenoid Pilot only): 24 volts DC **1D**, 110-120 volts AC, 50/60 Hz **1A**, Pressure Controlled **Leave Blank**

* For other voltages consult ROSS.



Valve Type	Kit Number*	No of Cables	Length meters (feet)
Solenoid Pilot	2239H77	2	4 (13.1)
Pressure Controlled	2240H77	2	10 (32.8)
	2241H77	1	4 (13.1)
	2242H77	1	10 (32.8)

* Cable has one connector.

Port Size	C _v	
	1, 2	3
1/2	1	6.3
3/4	1	7.7
1	1	8.0
1	1 1/2	23
1 1/4	1 1/2	30
1 1/2	1 1/2	30

Accessories & Options see page 23 & 24.

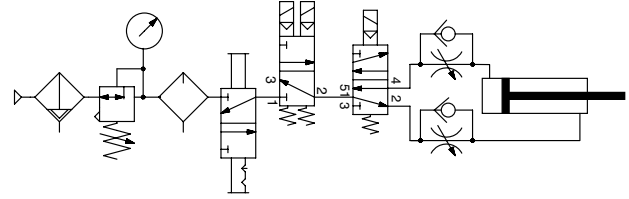


Safety Exhaust (Dump) Control Reliable Double Valves for External Monitoring

The RSe Series (3/2 version) valves are redundant 3/2 valves for external monitoring, that are designed to meet the needs and requirements of safe air supply/exhaust applications for machinery with pneumatic controls.



- Rapid response for minimum actuating time
- Status indicator provides valve condition (ready-to-run) feedback
- Position sensors for valve fault monitoring – external monitoring device required
- Well-proven spool valve design for reliable, smooth function
- Pressure range: 40 to 145 psig (3 to 10 bar), 0 to 145 psig (0 to 10) bar with external pilot supply (EPS), EPS port is a standard feature
- Sistema library data *pending*



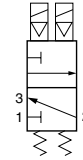
These valves are not designed for controlling clutch/brake mechanisms on mechanical power presses.

RSe Series – 3/2 Safety Exhaust Double Valves

Choose your options (in red) to configure your valve model number.

Series	Type/Function	External Monitoring	Revision Level	Automatic Reset	Sensor Feedback	Sensor
RSe	3/2	3	D	A	3	1
		Thread	Base Port Size	Voltage		Sensor Output PNP
		G D NPT N	Inlet Outlet	24 volts DC		
			1/8 1/8 10 1/4 1/4 20 1/2 1/2 40			

Port Size	C _v	
	1-2	2-3
1/8	0.44	1
1/4	0.7	1.47
1/2	1.9	3.85



Preassembled Wiring Kit	Connector Type	Kit Number*	Length meters (feet)	Description
		Lighted Connector		
	EN 175301-803 Form C (solenoids) M8 (sensors)	2657B77	2 (6.5)	These kits include 2 cables for the sensors (M8), and 2 cables (EN 175301-803 Form C) with connector plus a cord grip for each.
	* Each cable has one connector.			

Accessories & Options *see page 22 thru 24.*

Safe Cylinder Return

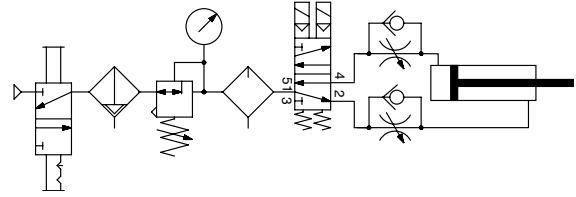
Control Reliable Double Valves for External Monitoring



The RSe Series (5/2 version) valves are redundant 5/2 valves for external monitoring, that are designed to meet the needs and requirements of safe cylinder return (5/2 valves) applications for machinery with pneumatic controls.

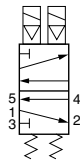


- Rapid response for minimum actuating time
- Status indicator provides valve condition (ready-to-run) feedback
- Position sensors for valve fault monitoring – external monitoring device required
- Well-proven spool valve design for reliable, smooth function
- Pressure range: 40 to 145 psig (3 to 10 bar), 0 to 145 psig (0 to 10) bar with external pilot supply (EPS), EPS port is a standard feature
- Sistema library data *pending*

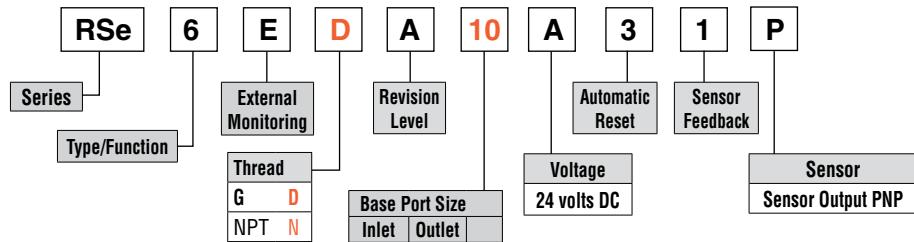


These valves are not designed for controlling clutch/brake mechanisms on mechanical power presses.

RSe Series – 5/2 Safe Cylinder Return Double Valves



Choose your options (in red) to configure your valve model number.



Port Size	C _v			
	1-2	1-4	2-3	4-5
1/8	0.85	0.58	0.49	0.75
1/4	0.98	0.79	0.69	0.85
1/2	2.07	1.54	1.51	1.81

Preassembled Wiring Kit	Connector Type	Kit Number*	Length meters (feet)	Description
	EN 175301-803 Form C (solenoids) M8 (sensors)	Lighted Connector		
			2 (6.5)	These kits include 2 cables for the sensors (M8), and 2 cables (EN 175301-803 Form C) with connector plus a cord grip for each.
	* Each cable has one connector.			

Accessories & Options *see page 22 thru 24.*



Safe Cylinder Return Control Reliable Double Valves with Dedicated Reset

The CROSSMIRROR® Series is a dual 5/2 spring return valve that when de-energized or a fault occurs will allow an actuator such as a cylinder to reverse and return to the safe position. Typical applications include vertical cylinder presses, but also any double-acting cylinder control where there is a potential crushing or amputation hazard. The CROSSMIRROR® Series returns an actuator to a safe position so that an employee may have safe access to equipment that contains pneumatically controlled double-acting cylinder hazards.



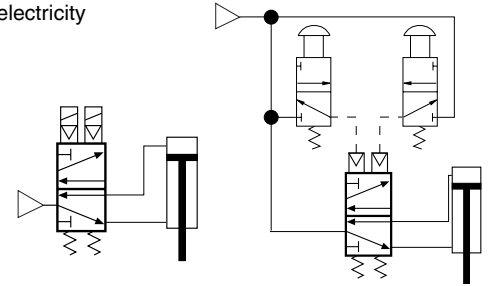
- Self-contained dynamic monitoring system requires no additional valve monitoring controls
- Status indication switch (ready-to-run) to inform machine controller of valve condition
- Valve fault results in a lockout condition and prevents unintentional reset with removal of air or electricity
- Requires an overt act to reset unit after lockout
- Manifolddable for multi valve applications
- Sistema library data available
- Explosion proof solenoid pilot available

Solenoid Pilot Controlled

- » Status indication switch (ready-to-run) to inform machine controller of valve condition

Pressure Controlled for 2-Hand Control Applications

- » Requires two inputs within 500 ms
- » Senses asynchronous inputs and valve actuation via dynamic internal monitoring
- » Asynchronous inputs result in a fault condition where pressure is applied to port 2
- » Status indication switch available to be integrated with electrical safety control system where equipped



*These valves are not designed for controlling clutch/brake mechanisms on mechanical power presses.
Meets Standards EN13736 and ANSI B11.2, Safety requirements for Pneumatic Cylinder Presses and other hazardous pneumatic cylinder applications.*

CM Series CROSSMIRROR® – 5/2 Double Valves

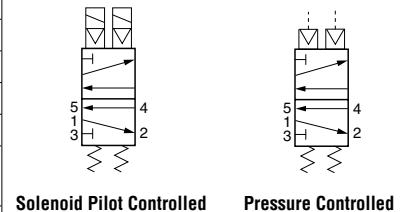
Valve Function	Connection Type	Port Sizes		Basic Size	Reset	Model Number				C _v			
		1	2, 4			with Status Indicator Switch*		without Status Indicator Switch**		1-2	1-4	2-3	4-5
						G Threads	NPT Threads	G Threads	NPT Threads				
5/2 Solenoid Pilot Controlled	EN 175301-803 Form C	1/4	1/4	0	Remote	CM26PDA00A11	CM26PNA00A11	CM26PDA00A1X	CM26PNA00A1X	0.8	0.6	0.5	1.1
					Solenoid	CM26PDA00A21	CM26PNA00A21	CM26PDA00A2X	CM26PNA00A2X	0.8	0.6	0.5	1.1
		3/8	3/8	0	Remote	CM26PDA01A11	CM26PNA01A11	CM26PDA01A1X	CM26PNA01A1X	0.8	0.6	0.5	1.1
					Solenoid	CM26PDA01A21	CM26PNA01A21	CM26PDA01A2X	CM26PNA01A2X	0.8	0.6	0.5	1.1
	EN 175301-803 Form A	1/2	1/2	2	Remote	CM26PDA22A11	CM26PNA22A11	CM26PDA22A1X	CM26PNA22A1X	3.0	2.5	2.0	3.9
					Solenoid	CM26PDA22A21	CM26PNA22A21	CM26PDA22A2X	CM26PNA22A2X	3.0	2.5	2.0	3.9
5/2 Pressure Controlled	–	1/4	1/4	0	Remote	CM26PDA00P11	CM26PNA00P11	CM26PDA00P1X	CM26PNA00P1X	0.8	0.6	0.5	1.1
	–	3/8	3/8	0	Remote	CM26PDA01P11	CM26PNA01P11	CM26PDA01P1X	CM26PNA01P1X	0.8	0.6	0.5	1.1
	–	1/2	1/2	2	Remote	CM26PDA22P11	CM26PNA22P11	CM26PDA22P1X	CM26PNA22P1X	3.0	2.5	2.0	3.9

* Valve includes status indicator switch with DIN type electrical connection, for status indicator switch with M12 type electrical connection consult ROSS.
** Voltage: 24 volts DC. For 110-120 volts AC, 50/60 Hz, replace "A" with an "B", e.g., CM26PDA00B1X.



Preassembled Wiring Kits	Basic Valve Size	Kit Number			Solenoid Connector Type	Length meters (feet)	
		Connector without Light	Lighted Connector				
			24 Volts DC	120 Volts AC			
0*	0*	2526H77	2529H77-W	2529H77-Z	EN 175301-803 Form A and Form C	5 (16.4)	
		2527H77	2530H77-W	2530H77-Z		10 (32.8)	
	2#	2#	2283H77	2532H77-W	2532H77-Z	EN 175301-803 Form A	5 (16.4)
			2284H77	2533H77-W	2533H77-Z		10 (32.8)
		2288H77**	–	–	M12	5 (16.4)	
		2289H77**	–	–	M12	10 (32.8)	

* Each cable has one connector. Kits include 1 cable for the status indicator (EN 175301-803 Form A), and 3 cables (EN 175301-803 Form C) with connector plus a cord grip for each.
Each cable has one connector. ** Coil includes light. Kits include 1 cable for the status indicator, and 3 cables with connector plus a cord grip for each.



Accessories & Options see page 22 & 23.

Safe Cylinder Return

Control Reliable Double Valves with Automatic Reset



The CROSSMIRROR® Series is a dual 5/2 spring return valve that when de-energized or a fault occurs will allow an actuator such as a cylinder to reverse and return to the safe position. Typical applications include vertical cylinder presses, but also control of any double-acting cylinder where there is a potential crushing or amputation hazard. The CROSSMIRROR® Series returns an actuator to a safe position so that an employee may have safe access to equipment that contains pneumatically controlled double-acting cylinder hazards.



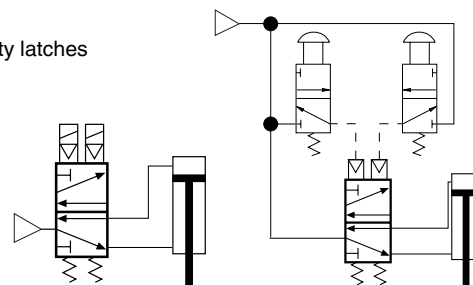
- Self-contained dynamic monitoring system requires no additional valve monitoring controls
- Status indication switch (ready-to-run) to inform machine controller of valve condition
- Applications include small size pneumatic cylinder-operated presses, valve operators, and safety latches
- Automatic reset upon de-actuation
- Sistema library data available
- Explosion proof solenoid pilot available

Solenoid Pilot Controlled

- » Status indication switch (ready-to-run) to inform machine controller of valve condition

Pressure Controlled for 2-Hand Control Applications

- » Requires two inputs within 500 ms
- » Senses asynchronous inputs via status indicator switch
- » Asynchronous inputs result in a fault condition where pressure is applied to port 2
- » Status indication switch available to be integrated with electrical safety control system where equipped



These valves are not designed for controlling clutch/brake mechanisms on mechanical power presses.

Meets Standards EN13736 and ANSI B11.2, Safety requirements for Pneumatic Cylinder Presses and other hazardous pneumatic cylinder applications.

77 Series CROSSMIRROR® – 5/2 Double Valves



Valve Function	Port Sizes		Basic Size	Model Number				C _v			
	1	2, 4		with Status Indicator Switch#		without Status Indicator Switch		1-2	1-4	2-3	4-5
				G Threads	NPT Threads	G Threads	NPT Threads				
5/2 Solenoid Pilot Controlled	1/2	3/8	2	YD7776A3411W*	Y7776A3411W*	YD7776A3410W*	Y7776A3410W*	2.0	1.6	1.6	2.8
	3/4	1/2	4	YD7776A4421W*	Y7776A4421W*	YD7776A4420W*	Y7776A4420W*	3.2	3.4	2.7	7.2
	3/4	3/4	4	YD7776A5411W*	Y7776A5411W*	YD7776A5410W*	Y7776A5410W*	3.2	3.4	2.7	7.2
	SAE 12	SAE 12	4##	SYD7776A4H10W*	SY7776A4H10W*	SYD7776A4H11W*	SY7776A4H11W*	3.2	3.4	2.7	7.2
5/2 Pressure Controlled	1/2	3/8	2	YD7786A3411W*	Y7786A3411W*	YD7786A3410	Y7786A3410	2.0	1.6	1.6	2.8
	3/4	1/2	4	YD7786A4421W*	Y7786A4421W*	YD7786A4420	Y7786A4420	3.2	3.4	2.7	7.2
	3/4	3/4	4	YD7786A5411W*	Y7786A5411W*	YD7786A5410	Y7786A5410	3.2	3.4	2.7	7.2
	SAE 12	SAE 12	4##	SYD7786A4H11W*	SY7786A4H11W*	SYD7786A4H10	SY7786A4H10	3.2	3.4	2.7	7.2

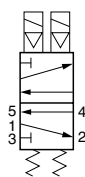
*Voltage: 24 volts DC. For 110 volts AC, 50 Hz; 120 volts AC, 50/60 Hz, replace "W" with a "Z", e.g., Y7776A3411Z.

For other voltages consult ROSS.

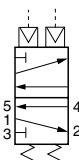
Valve include status indicator switch with DIN type connection, for status indicator switch with M12 type connection consult ROSS.

Model number includes base.

Solenoid Pilot Controlled



Pressure Controlled



Preassembled Wiring Kits	Kit Number	Solenoid Connector Type	Length meters (feet)	Description
	2243H77	EN 175301-803 Form A	5 (16.4)	These kits include 2 cables with either EN or M12 connectors for the solenoids. All cables include cord grips.
	2244H77	EN 175301-803 Form A	10 (32.8)	
	2245H77	M12	5 (16.4)	
	2246H77	M12	10 (32.8)	

Accessories & Options *see page 22 thru 24.*

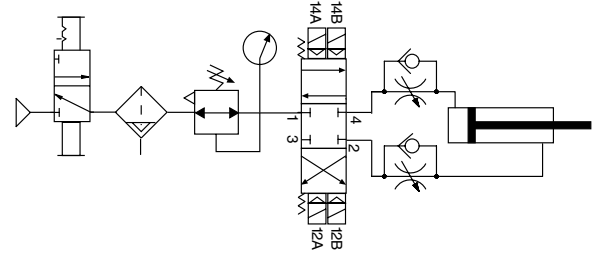


Safe Cylinder Control and Stop Control Reliable Double Valves for External Monitoring

The CROSSCHECK™ CC4 Series safety directional valve is a redundant, externally monitored 4-ported, 3-position (closed center) pneumatic valve for Category 4, PL e applications, where stopping and holding a cylinder is necessary for safe operator access during production-related tasks. The valve is constructed with tight-sealing, dirt-tolerant poppet-type valve internals.



- Closed Center valve function - allows full control of double-acting cylinders, including jog and load-holding functions
- Redundant control with position feedback - can achieve Category 4, PL e, when used with proper safety controls
- Designed for external monitoring - allows full safety control and feedback monitoring of cylinder control circuit
- Mid-position sensing - for detection of safe, closed center position
- ROSS poppet technology - fast, reliable, dirt-tolerant, face-sealing, low friction
- LED indicators on solenoids - aids troubleshooting



These valves are not designed for controlling clutch/brake mechanisms on mechanical power presses.

CC4 Series CROSSCHECK™ – 4/3 Double Valves

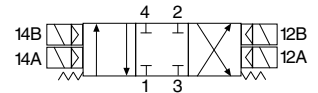
Choose your options (in red) to configure your valve model number.

CC4 | **M** | **23** | **G** | **A** | **E** | **X** | **S** | **A**

Series: CC4
 Pressure Release: Manual **M**, Valve Only (No Base) **X**
 Voltage: 24 volts DC
 Communication: None
 Monitoring: External
 Revision Level: A
 Pin Configuration: Standard
 Thread: G **G**, NPT **N**, Valve Only (No Base) **X**

Basic Size	Port Size		Model Number
	Inlet	Outlet	
0	1/4	1/4	22
	3/8	3/8	23
	Valve Only (No Base)		2X
2	1/2	1/2	44
	3/4	3/4	45
	Valve Only (No Base)		4X

Port Size			C _v			
Inlet	Outlet	Exhaust	1-2	1-4	2-3	4-3
1/4	1/4	1/4	0.9	0.9	0.7	0.6
3/8	3/8	3/8	0.9	0.9	0.7	0.6
1/2	1/2	1/2	1.7	1.6	1.8	1.7
3/4	3/4	3/4	1.7	1.6	1.8	1.7



Accessories & Options *see page 22 & 24.*

Load Holding

Pilot Operated Check Valves for External Monitoring

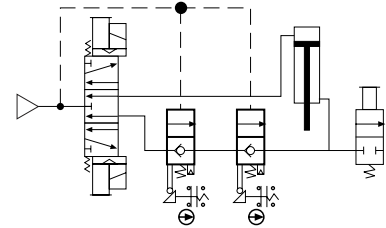
Cat. 2
PL c

Cat. 3
PL e

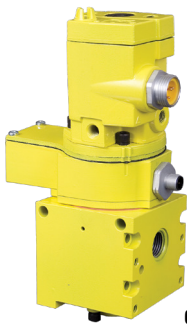


Pilot Operated Check valves are designed to trap pressure in order to hold a cylinder in place when a safety event occurs. The SV27 Series Sensing Valve uses a safety-rated DPST switch to monitor the valve's operating position. The SV27 PO Check valves can be used for load holding functions in Category 2 (single) or Category 3 (redundant) applications with proper integration and monitoring. The feedback switch informs the controls that the valve internals have shifted properly.

- Poppet construction for near zero leakage & dirt tolerance
- Direct-operated safety-rated status switch (DPST)
- A diagnostic coverage (DC) of 90% can be obtained by monitoring the safety switch status
- Sistema library data available



SV27 Series PO Check with Sensing – PO Check and Redundant PO Check



Cat. 2



Cat. 2



Cat. 3

Choose your options (in red) to configure your valve model number.

SV27 **D** **C** **11** **540** **8CS** **AA** **1A**

Series

Revision Level

Inline Mounted

Voltage* (Solenoid Pilot only)

Thread

Function

Actuation

24 volts DC **1D**

110-120 volts AC, 50/60 Hz **1A**

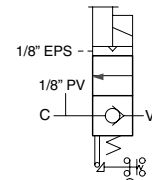
* For other voltages consult ROSS.

2/2 Normally Closed	11
2/2 Redundant NC	55

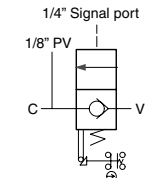
Solenoid Pilot	8CS
Pressure Controlled	5AS

Body Size	Port Size		
	Inlet	Outlet	
3/4	1/2	1/2	540
	3/4	3/4	550
	1	1	560
1 1/4	1	1 1/2	760
	1 1/4	1 1/2	770
	1 1/2	1 1/2	780

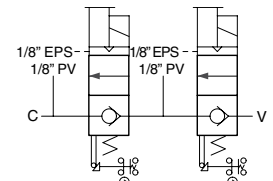
Valve Type	Port Size	Body Size	C _v
	1, 2	1-2	
Single	1/2	3/4	4.5
	3/4	3/4	8.3
	1	3/4	10.3
	1 1/4	1 1/4	20
	1 1/2	1 1/4	29
Redundant	1/2	3/4	3.8
	3/4	3/4	5.6
	1	3/4	8
	1 1/4	1 1/4	12
	1 1/2	1 1/4	19



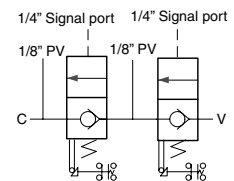
Solenoid Pilot Controlled



Pressure Controlled



Redundant Solenoid Pilot Controlled



Redundant Pressure Controlled

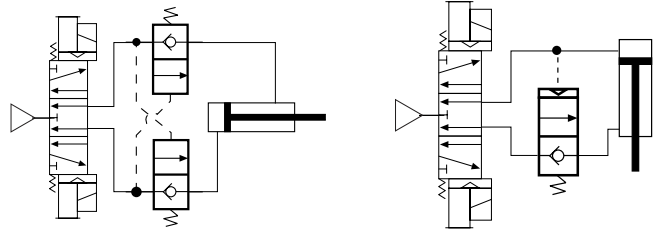
Preassembled Wiring Kits	Valve Type	Kit Number*	No of Cables	Length meters (feet)	Description
	Solenoid Pilot	2239H77	2	4 (13.1)	These wiring kits come with a cord grip on each cable. One cable has a 3-pin MINI connector for the solenoid and one has a 5-pin M12 (Micro) connector for the sensing switch.
		2240H77	2	10 (32.8)	
	Pressure Controlled	2241H77	1	4 (13.1)	These wiring kits include 1 cable with a 5-pin M12 connector for the sensing switch, and a cord grip.
2242H77		1	10 (32.8)		

* Cable has one connector.

Accessories & Options *see page 23.*

Pilot Operated Check valves are designed to trap pressure in order to hold a cylinder in place. Poppet internals use internal pressure to help complete the seal in order to trap pressure and hold the position of the cylinder in place.

- Poppet construction for near zero leakage
- Cylinder position/load holding applications



Right-Angle PO Check Valves, Cylinder Position Holding										
Valve Function	Port Size*		Valves with G Threads			Valves with NPT Threads			C _v	
			Valve Model Number	Port 12	Tightening Torque Max. Ft-lb (Nm)	Valve Model Number	Tightening Torque Max. Ft-lb (Nm)			
	Port 1	Port 2						1-2	2-1	
Right-Angle Threaded Banjo*	1/8	1/8	D1958A1010	M5	7.38 (10)	1958A1010	22.13 (30)	0.4	0.4	
	1/4	1/4	D1958A2010	M5	8.85 (12)	1958A2010	14.75 (20)	0.4	0.4	
	3/8	3/8	D1958A3010	M5	14.75 (20)	1958A3010	22.13 (30)	0.4	0.4	
	1/2	1/2	D1958A4010	M5	22.13 (30)	1958A4010	29.50 (40)	0.8	0.7	

* Port 1 with female threads, port 2 with male threads.



Right-Angle PO Check Valves, Cylinder Position Holding											
Valve Function	Valves with G Threads				Valves with NPT Threads				C _v		
	Port Size**		Valve Model Number	Port 12	Tightening Torque Max. Ft-lb (Nm)	Port Size**		Valve Model Number			Tightening Torque Max. Ft-lb (Nm)
	Port 1	Port 2				Port 1	Port 2				
Right-Angle Push-to-Connect Fitting**	4 mm	1/8	D1958A1140	M5	7.38 (10)	5/32"	1/8	1958A1115	7.38 (10)	0.4	0.4
	6 mm	1/8	D1958A1160	M5	7.38 (10)	1/4"	1/8	1958A1120	7.38 (10)	0.4	0.4
	8 mm	1/8	D1958A1180	M5	7.38 (10)	-	-	-	7.38 (10)	0.4	0.4
	6 mm	1/4	D1958A2160	M5	8.85 (12)	1/4"	1/4	1958A2120	8.85 (12)	0.8	0.7
	8 mm	1/4	D1958A2180	M5	8.85 (12)	3/8"	1/4	1958A2130	8.85 (12)	0.8	0.7
	10 mm	1/4	D1958A2110	M5	8.85 (12)	-	-	-	8.85 (12)	0.8	0.7
	8 mm	3/8	D1958A3180	M5	14.75 (20)	3/8"	3/8	1958A3130	14.75 (20)	1.2	1.3
	10 mm	3/8	D1958A3110	M5	14.75 (20)	-	-	-	14.75 (20)	1.2	1.3

** Port 1 tubing size in inches (") or millimeters (mm).



Manual Override	Manual Trapped Pressure Relief Adapter	Port 1	Port 2	Port Threads	Model Number*
		M5	M5 Manual Operated Check	G	D1998A1010
		5/32	10-32 Manual Operated Check	NPT	1998A1015

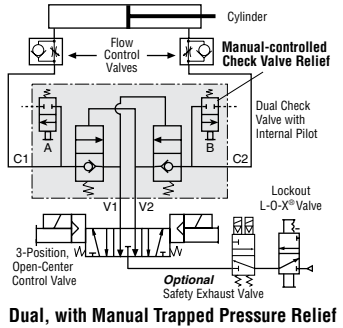
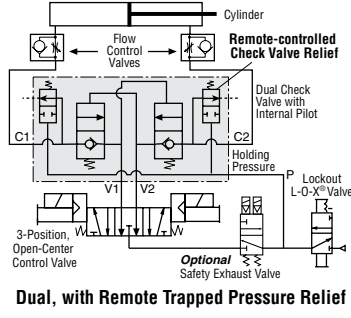
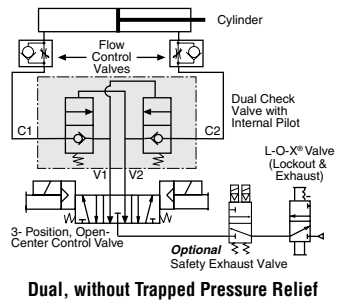
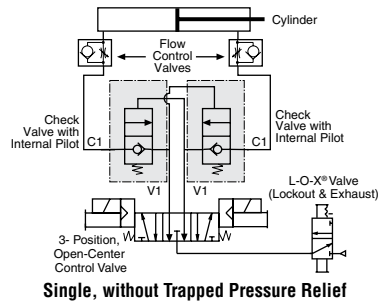
* Adapter threads into the signal port.



Load Holding Pilot Operated Check Valves with or without Trapped Pressure Relief



Pilot Operated Check valves are designed to trap pressure in order to hold a cylinder in place. Poppet internals use internal pressure to help complete the seal in order to trap pressure and hold the position of the cylinder in place. There are a variety of options for pressure relief such as manual, remote signal, and electrical to meet the requirements of the specific application.



PO Check Valves, Pressure Controlled, Load Holding

Valve Type	Ports Size	Body Size	Valve Model Number		C _v
			G Threads	NPT Threads	
Single, without Trapped Pressure Relief	1/4	3/8	D2751A2903	2751A2903	2.3
	3/8	3/8	D2751A3901	2751A3901	3.8
	1/2	3/8	D2751A4902	2751A4902	4.0
	1/2	3/4	D2751A4905	2751A4905	7.7
	3/4	3/4	D2751A5903	2751A5903	9.0
	1	3/4	D2751A6901	2751A6901	9.0
	1	1 1/4	D2751B6904	2751B6904	24
	1 1/4	1 1/4	D2751B7901	2751B7901	29
	1 1/2	1 1/4	D2751B8902	2751B8902	29

PO Check Valves, Pressure Controlled, Load Holding

Valve Type	Ports Size	Valve Model Number		C _v
		G Threads	NPT Threads	
Single, without Trapped Pressure Relief	1/4	D2751A2908	2751A2908	2.2
	3/8	D2751A3908	2751A3908	2.9
	1/2	D2751A4915	2751A4915	3.2
Single, with Remote Trapped Pressure Relief	3/8	D2751A3922	2751A3922	2.6
	1/2	D2751A4922	2751A4922	2.8
	3/4	D2751A5917	2751A5917	9.2
Single, with Manual Trapped Pressure Relief	3/8	D2751A3920	2751A3920	2.6
	1/2	D2751A4920	2751A4920	2.8
	3/4	D2751A5919	2751A5919	9.2
Dual, without Trapped Pressure Relief	3/8	D2768C3900	2768C3900	2.9
	1/2	D2768C4900	2768C4900	3.2
	3/4	D2768C5900	2768C5900	8.5 #
	1	D2768A6900	2768A6900	8.5 #
Dual, with Remote Trapped Pressure Relief	3/8	D2768D3901	2768D3901	2.9
	1/2	D2768D4901	2768D4901	3.2
	3/4	D2768D5901	2768D5901	8.5 #
	1	D2768D6901	2768D6901	8.5 #
Dual, with Manual Trapped Pressure Relief	3/8	D2768D3904	2768D3904	2.9
	1/2	D2768D4904	2768D4904	3.2
	3/4	D2768D5904	2768D5904	8.5 #
	1	D2768D6904	2768D6904	8.5 #

Effective C_v varies with load and pressure drop. Consult ROSS for specifics on your system.

PO Check Valves, Solenoid Pilot Controlled, Load Holding

Valve Type	Ports Size	Valve Model Number								C _v
		DIN Connector*		3-Pin Mini Connector*		24 Volts DC 3-Pin Mini		24 Volts DC 4-Pin Micro		
		G Threads	NPT Threads	G Threads	NPT Threads	G Threads	NPT Threads	G Threads	NPT Threads	
Dual, Solenoid Controlled, with Remote Trapped Pressure Relief	3/8	D2778D3900W	2778D3900W	D2778D3901W	2778D3901W	D2778D3902	2778D3902	D2778D3904	2778D3904	2.9
	1/2	D2778D4900W	2778D4900W	D2778D4901W	2778D4901W	D2778D4902	2778D4902	D2778D4904	2778D4904	3.2
	3/4	D2778D5900W	2778D5900W	D2778D5901W	2778D5901W	D2778D5902	2778D5902	D2778D5904	2778D5904	8.5 #
	1	D2778D6900W	2778D6900W	D2778D6901W	2778D6901W	D2778D6902	2778D6902	D2778D6904	2778D6904	8.5 #

*Voltage: 24 volts DC. For 110-120 volts AC, 50/60 Hz, replace "W" with a "Z", e.g., D2778D3900Z. For other voltages consult ROSS.
Effective C_v varies with load and pressure drop. Consult ROSS for specifics on your system.



Cat. 4
PL e

Cat. 1
PL b

Hazardous Locations – Explosion-Proof Safety Exhaust Double Valves and Directional Control Valves

APPROVED for use in the following Hazardous Locations – Ex m IIT4 and Division 1

Specifications in accordance to CSA certificate: Class I, Division 1, Groups A, B, C and D; Class II, Groups E, F and G; Class III; Class I, Division 2, Groups A, B, C, D.

Specifications in accordance to FM certificate: Explosion-proof Class I, Division 1, Groups A, B, C, D, T4, Ta = 60 °C (encapsulation/explosion-proof Class I, Zone 1, AEx m II T4, Ta = 60 °C; dust-ignition-proof for Class II/III, Division 1, Groups E, F and G, T4, Ta = 60 °C); Nonincendive Class I, Division 2, Groups A, B, C, D, T4, Ta = 60 °C; Suitable for Class II, III, Division 2, Groups E, F, G, T4, Ta = 60 °C

CSA CLASS 2258 02 – process control equipment – for hazardous locations;

FM CLASS 3600, 3611, 3615, 3810 – hazardous (classified) location electrical equipment.



DM²® Series C – 3/2 Explosion-Proof Safety Exhaust Double Valves with Dynamic Monitoring and Memory

- Dynamic memory of abnormal function retains lockout condition and this prevents unintentional reset with removal of air or electricity
- Self-contained dynamic monitoring system requires no additional valve monitoring controls
- Electrical reset valve
- Rapid response time to minimize stopping time
- Status Indicator switch for valve condition (ready to run) feedback
- Highly contaminant-tolerant poppet construction
- Sistema library data available

These valves are not designed for controlling clutch/brake mechanisms on mechanical power presses.

SIL 3
Functional Safety
Cat. 4
PL e



ISO
13849-1:2015

Choose your options (in red) to configure your valve model number.

DM2C N A 42 A 2 1 019

Thread: G **D**, NPT **N**, Valve Only (No Base) **X**

Revision Level: Basic Size **A** (4, 8, 12, 30), Basic Size 2 **B**

Basic Size	Port Size		Cv
	Inlet	Outlet	
2	1/4	1/4	20
	3/8	3/8	21
	Valve Only (No Base)		2X
4	1/2	1/2	42
	3/4	3/4	54
	Valve Only (No Base)		5X
8	1	1	55
	Valve Only (No Base)		5X
	1	1	66
12	Valve Only (No Base)		6X
	1 1/2	2	88
	Valve Only (No Base)		8X
30	Valve Only (No Base)		8X

Reset Type: Solenoid

Status Indicator*: Yes **1**, No/Valve Only (N/A) **X**
*Installed in the base.

Pilot Type: Explosion-Proof

Basic Size	Inlet Port Size	Cv	
		1-2	2-3
2	1/4	1.67	2.61
	3/8	2.17	3.57
4	1/2	3.01	6.51
	3/4	4.20	9.36
8	1	4.32	9.36
	1	8.68	17.31
30	1 1/2	20.11	55.10

Voltage*: 24 volts DC **A**, 120 volts AC, 60 Hz **B**
* For other voltages consult ROSS.

21 & 27 Series – 2/2 Explosion-Proof Directional Control In-line Valves

- Poppet construction for near zero leakage & high dirt tolerance
- Pilot can be rotated, giving the ability to change orientation
- Repeatability throughout the life of the valve
- 21 Series - Metal, aluminum internals - for low temperature applications
- 27 Series - Acetal internals



Cat. 1
PL b

ATEX Certified valves available.

Choose your options (in red) to configure your valve model number.

27 71 B 200 2 W

Thread: G **D**, NPT **Leave Blank**

Revision Level: Body Size, Port Size

Body Size	Port Size		Cv
	1,2	NC NO	
3/8	1/4	200	2.3
	3/8	300	3.3
	1/2	401	3.5
3/4	1/2	400	6.5
	3/4	500	7.3
	1	601	7.9
1 1/4	1	600	21
	1 1/4	700	20
	1 1/2	801	21
2 (27 Series valves only)	1 1/2	800	21
	2	900	49
	2 1/2	901	57

Explosion-Proof Series: 21 Series Valve **5**, 27 Series Valve **2**

Valve Series, Port Size, Body Size, Cv

Valve Series	Port Size	Body Size	Cv	
			NC	NO
21 or 27 Series	1/4	3/8	2.3	2.3
	3/8	3/8	3.8	3.3
	1/2	3/8	4.0	3.5
	1/2	3/4	7.7	6.5
	3/4	3/4	9.0	7.3
	1	3/4	9.0	7.9
	1	1/4	24	21
	1 1/4	1/4	29	20
	1 1/2	1/4	29	21
27 Series	1 1/2	2	49	49
	2	2	57	57
	2 1/2	2	64	72

Function: 2/2 Normally Closed **71**, 2/2 Normally Open **72**

Voltage* (Solenoid Pilot only): 24 volts DC **W**, 120 volts AC, 60 Hz **Z**
* For other voltages consult ROSS.

Hazardous Locations – Explosion-Proof Directional Control Valves



APPROVED for use in the following Hazardous Locations – Ex m II T4 and Division 1

Specifications in accordance to CSA certificate: Class I, Division 1, Groups A, B, C and D; Class II, Groups E, F and G; Class III; Class I, Division 2, Groups A, B, C, D. Specifications in accordance to FM certificate: Explosion-proof Class I, Division 1, Groups A, B, C, D, T4, Ta = 60 °C (encapsulation/explosion-proof Class I, Zone 1, AEx m II T4, Ta = 60 °C; dust-ignition-proof for Class II/III, Division 1, Groups E, F and G, T4, Ta = 60 °C); Nonincendive Class I, Division 2, Groups A, B, C, D, T4, Ta = 60 °C; Suitable for Class II, III, Division 2, Groups E, F, G, T4, Ta = 60 °C

CSA CLASS 2258 02 – process control equipment – for hazardous locations;

FM CLASS 3600, 3611, 3615, 3810 – hazardous (classified) location electrical equipment.



- Poppet construction for near zero leakage & high dirt tolerance
- Pilot can be rotated, giving the ability to change orientation
- Repeatability throughout the life of the valve
- 21 Series - Metal, aluminum internals - for low temperature applications
- 27 Series - Acetal internals

ATEX Certified valves available.

21 & 27 Series – 3/2 Explosion-Proof Directional Control In-line Valves



Choose your options (in red) to configure your valve model number.

27 **73** **B** **200** **2** **W**

Thread
G **D**
NPT **Leave Blank**

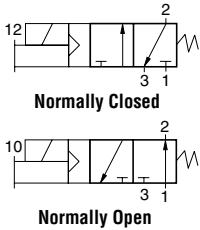
Series
21 Low Temperature **21***
27 Standard **27**
*Available in 3/8, 3/4, 1 1/4 Body Size only.

Function
3/2 Normally Closed **73**
3/2 Normally Open **74**

Body Size	Port Size		
	1,2		
3/8	1/4	200	
	3/8	300	
	1/2	401	
3/4	1/2	400	
	3/4	500	
	1	601	
1 1/4	1	600	
	1 1/4	700	
	1 1/2	801	
2 (27 Series valves only)	1 1/2	800	
	2	900	
	2 1/2	901	

Voltage* (Solenoid Pilot only)
24 volts DC **W**
120 volts AC, 60 Hz **Z**
* For other voltages consult ROSS.

Explosion-Proof Series
21 Series Valve **5**
27 Series Valve **2**



Valve Series	Port Size			Body Size	C _v			
	1, 2	3			NC		NO	
					1-2	2-3	1-2	2-3
21 Low Temperature	1/4	1/2	3/8	2.4	3.4	2.0	2.1	
	3/8	1/2	3/8	3.0	5.8	2.3	2.4	
	1/2	1/2	3/8	3.0	5.2	2.9	2.8	
	1/2	1	3/4	6.6	12	6.5	7.0	
	3/4	1	3/4	7.8	13	7.5	7.5	
	1	1	3/4	7.5	12	7.7	7.6	
	1	1 1/2	1 1/4	24	40	15	17	
27 Standard	1 1/4	1 1/2	1 1/4	29	39	21	23	
	1 1/2	1 1/2	1 1/4	30	38	22	23	
	1/4	1/2	3/8	2.5	3.1	2.3	2.7	
	3/8	1/2	3/8	3.6	5.3	2.8	3.2	
	1/2	1/2	3/8	3.3	5.3	2.8	3.2	
	1/2	1	3/4	6.3	9.2	6.3	8.0	
	3/4	1	3/4	7.7	11	6.9	7.4	
	1	1	3/4	8	12	6.8	7.5	
	1	1 1/2	1 1/4	23	34	17	24	
	1 1/4	1 1/2	1 1/4	30	32	19	24	
	1 1/2	1 1/2	1 1/4	30	31	19	23	
	1 1/2	2 1/2	2	68	70	57	59	
	2	2 1/2	2	70	70	58	61	
	2 1/2	2 1/2	2	70	71	54	55	

21 & 27 Series – 4/2 Explosion-Proof Directional Control In-line Valves



Choose your options (in red) to configure your valve model number.

27 **76** **B** **200** **2** **W**

Thread
G **D**
NPT **Leave Blank**

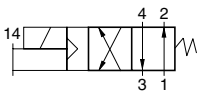
Series
21 Low Temperature **21***
27 Standard **27**

Function
4/2 Normally Closed **76**

Body Size	Port Size		
	Inlet	Outlet	
3/8	1/4	1/2	200
	3/8	1/2	300
	1/2	1/2	401
3/4	1/2	1	400
	3/4	1	500
	1	1	601
1 1/4	1	1 1/2	600
	1 1/4	1 1/2	700
	1 1/2	1 1/2	801

Voltage* (Solenoid Pilot only)
24 volts DC **W**
120 volts AC, 60 Hz **Z**
* For other voltages consult ROSS.

Explosion-Proof Series
21 Low Temperature **5**
27 Series **2**



Valve Style	Port Size			Body Size	C _v	
	1, 2, 4	3			1-2, 1-4	4-3, 2-3
21 Low Temperature	1/4	1/2	3/8	2.1	2.2	
	3/8	1/2	3/8	2.5	3.1	
	1/2	1/2	3/8	2.9	3.8	
	1/2	1	3/4	5.7	6.5	
	3/4	1	3/4	7.1	8.7	
	1	1	3/4	7.7	10	
	1	1 1/2	1 1/4	18	23	
27 Standard	1 1/4	1 1/2	1 1/4	20	28	
	1 1/2	1 1/2	1 1/4	21	29	
	1/4	1/2	3/8	2.1	2.9	
	3/8	1/2	3/8	2.9	4.2	
	1/2	1/2	3/8	3.1	4.3	
	1/2	1	3/4	5.6	8.1	
	3/4	1	3/4	7.0	9.3	
	1	1	3/4	7.8	10	
	1	1 1/2	1 1/4	19	26	
1 1/4	1 1/2	1 1/4	21	27		
1 1/2	1 1/2	1 1/4	22	27		

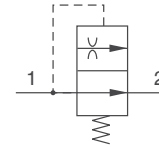
Accessories & Options see page 24.

AIR-FUSE Flow Diffusers – 19 Series

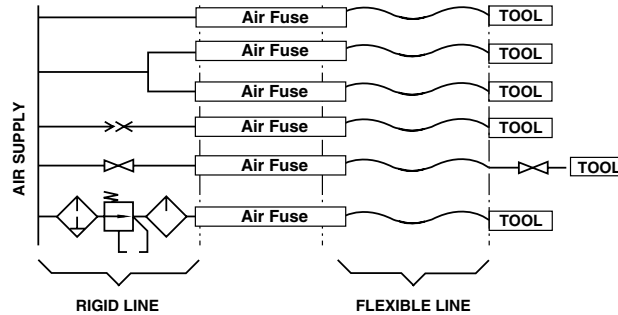
- **Protection from Broken Hose or Plastic Tubing**
 - » For use with only non-corrosive, non-flammable, non-hazardous gases
 - » Automatically reduces flow to minimize hose whip upon sensing a broken hose/tube
 - » Simple installation; Reset by shutting off air supply



Port Size	Porting Type	Model Number		Shut-off Flow Rate at 100 psi (7 bar) scfm (dm³/s)	Flow at 100 psi (7 bar) ΔP 1 psi (0.07 bar) scfm (dm³/s)
		G Threads	NPT Threads		
1/4	Female-Female	D1969D2002	1969D2002	29.7 (14)	13.8 (8)
3/8	Female-Female	D1969D3002	1969D3002	68.2 (32)	28.6 (14)
1/2	Female-Female	D1969D4002	1969D4002	102.3 (48)	49.2 (23)
3/4	Female-Female	D1969D5002	1969D5002	169.5 (80)	91.1 (43)
1	Female-Female	D1969D6002	1969D6002	271.0 (128)	144 (68)
1½	Female-Female	D1969D8002	1969D8002	568.0 (268)	307 (145)



Typical Installation Illustration



Safety Clamping Devices

- ROSS CONTROLS specializes in pneumatic and hydraulic safety solutions.
- When needing rod locks, rod brakes or safety catchers ROSS CONTROLS can assist you in finding the optimal solution for every application.

For more information consult ROSS.



Hydraulic Block & Bleed Safety Valve Systems

Control Reliable Redundant Valves for External Monitoring



The HBB Series valves are redundant 3/2 valve systems designed to meet the needs and requirements of safe hydraulic block and bleed applications. These valve systems are equipped with position sensors for external monitoring by an electrical safety control system.

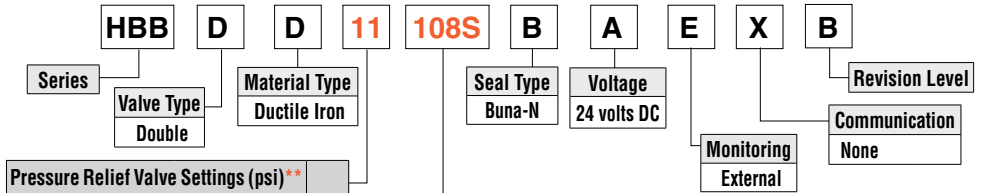
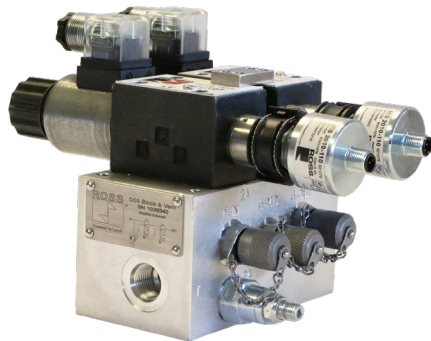
- Blocks hydraulic supply pressure and bleeds downstream pressure back to tank
- Includes relief valve on inlet
- Flow up to 50 gpm
- Body Sizes D03, D05, and D07
- Port Sizes SAE-8, SAE-12, and 1¼ Code 61 Flange
- Tamper-resistant design prevents unauthorized personnel from altering the valve

(Certifications pending)



HBB Series – 3/2 Safe Supply/Drain to Tank Double Valves

Choose your options (in red) to configure your valve model number.



Pressure Relief Valve Settings (psi)**		
Maximum System Operating Pressure	Relief Valve Factory Preset	
1000	1100	11
1500	1700	17
2000	2200	22
2500	2800	28
3000	3300	33
3500	3900	39
4000	4400	44
4500	5000	50
5000	5500	55
No Pressure Relief Valve		XX

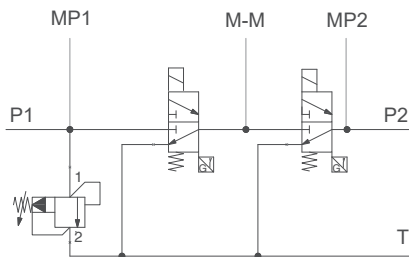
For system parameters outside of this range, please contact ROSS.)

Body Size	Flow Rate	Port Size	Port Thread/Type	
D03	0 to 10 gpm	SAE-8	SAE	108S
D05	0 to 20 gpm	SAE-12	SAE	212S
D07	0 to 50 gpm	1¼	Code 61 Flange	371F

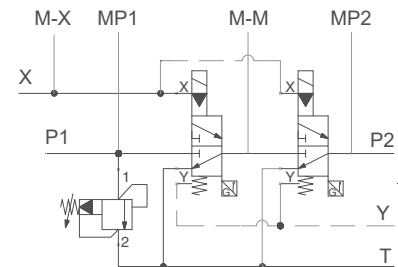
** If your system already incorporates a means of pressure relief, select No Pressure Relief Valve.

Schematics

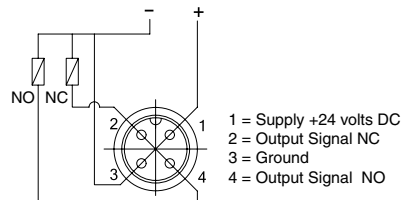
Body Size D03, D05 –
Direct Solenoid Operated
with Pressure Relief Valve



Body Size D07 –
Solenoid Pilot Operated
with Pressure Relief Valve



Position Switch Sensor Connector



Accessories & Options see page 25.



Hydraulic Block & Stop Safety Valve Systems

Control Reliable Redundant Valves for External Monitoring

The HBH Series valves are redundant blocking valve systems designed for critical applications where safe load holding is required for hydraulically controlled cylinders. These valve systems are equipped with position sensors for external monitoring by an electrical safety control system.

(Certifications pending) **CE**

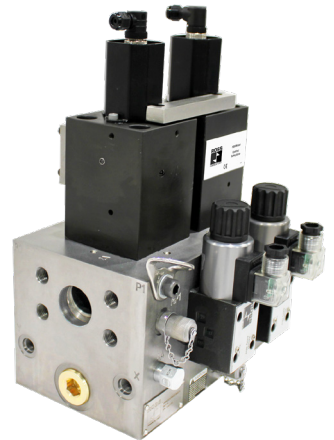
- Stops cylinder motion and holds the cylinder in position in the event of loss of supply pressure and/or electrical power
- Holds a vertical load in the event of loss of supply pressure or electrical power
- Flow up to 145 gpm
- Two Body Sizes, D25 and D32
- Port Sizes 1½ and 2, Code 62 Flange
- Tamper-resistant design prevents unauthorized personnel from altering the valve

HBH Series – 3/2 Load Holding Double Valves

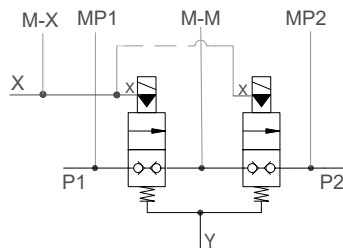
Choose your options (in red) to configure your valve model number.

HBH	D	D	XX	682F	B	A	E	X	A
Series	Valve Type Double				Seal Type Buna-N	Voltage 24 volts DC		Monitoring External	Revision Level None
	Material Ductile Iron								Communication None
	Pressure Relief No Pressure Relief Valve								

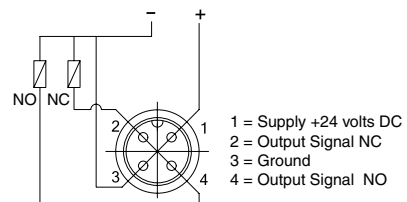
Body Size	Flow Rate	Port Size	Port Thread/Type	
D25	0 to 90 gpm	1-1/2	Code 62 Flange	682F
		2	Code 62 Flange	692F
D32	0 to 145 gpm	2	Code 62 Flange	792F



Schematic



Position Switch Sensor Connector



Accessories & Options see page 25.

Pneumatic Valves Wiring Kits

Kits for M35 Series Valves	Solenoid Connector Type	Kit Number	Connector Type	Length meters (feet)	Description
	M12 System Cables Connector - one end	2644B77	5-pin, straight A-coded	5 (16.4)	This kit includes 2 cords with female connector on one end and flying leads on the opposite end.
M12 System Cables Connector - both ends	2645B77	5-pin, straight A-coded	5 (16.4)	This kit includes 2 cords with female connector on one end and male, connector on the opposite end.	

Kits for DM ¹ & CROSSMIRROR [®] 77 Series Valves	Solenoid Connector Type	Kit Number	Length meters (feet)	Description
	EN 175301-803 Form A	2243H77	5 (16.4)	These kits include 2 cables with either EN or M12 connectors for the solenoids. All cables include cord grips. Status Indicator kit ordered separately.
		2244H77	10 (32.8)	
	M12	2245H77	5 (16.4)	
2246H77		10 (32.8)		

Status Indicator Kits for DM ¹ Series Valves	Solenoid Connector Type	Kit Number	Length meters (feet)	Description
	EN 175301-803 Form A	2247H77	5 (16.4)	Status Indicator kits include 1 cable with EN or M12 connector and a cord grip.
		2248H77	10 (32.8)	
	M12	2666H77*	5 (16.4)	
2667H77*		10 (32.8)		

* Available for DM¹ Series valves only.

Kits for DM ² [®] Series Valves & CROSSMIRROR [®] CM Series Size 2 Valves	Solenoid Connector Type	Kit Number*			Length meters (feet)	Description	
		Connector without Light	Lighted Connector				
			24 Volts DC	120 Volts AC			
	EN 175301-803 Form A	2283H77	2532H77-W	2532H77-Z	5 (16.4)		These kits include 1 cable for the status indicator, and 3 cables with connector plus a cord grip for each.
		2284H77	2533H77-W	2533H77-Z	10 (32.8)		
M12	2288H77**	-	-	5 (16.4)			
	2289H77**	-	-	10 (32.8)			

* Each cable has one connector. **Coil includes light.

Kit for RSe Series Valves	Connector Type	Kit Number*	Length meters (feet)	Description
		Lighted Connector		
EN 175301-803 Form C (solenoids) M8 (sensors)	2657B77	2 (6.5)	This kit includes 2 cables for the sensors (M8), and 2 cables (EN 175301-803 Form C) with connector plus a cord grip for each.	

* Each cable has one connector.

Kit for CROSSCHECK [™] CC4 Series Valves	Solenoid Connector Type	Kit Number	Connector Type	Number of Cables	Length meters (feet)	Description
	M12 System Cables Connector - one end	2642K77	5-pin, straight, A-coded	3	5 (16.4)	This kit includes 2 cords with female connector on one end and flying leads on the opposite end, and 1 cord with male connector on one end and flying leads on the opposite end.

Wiring Kits with J-Box	Connector Types	Kit Number*	Length meters (feet)	Description
	M12 - EN	2249H77	1 (3.3)	A J-Box is a junction box with a 10-pin MINI connector for connecting to the user's control system and (4) 5-pin M12 ports for connecting to the 3 solenoids and the status indicator on the DM ² [®] Series valve. The J-Box kits include the J-Box and (4) 1-meter cables for connecting to the valve. These cables have a connector on each end.
	M12 - M12	2250H77	1 (3.3)	

*24 volts DC only.

10 PIN MINI Cable	Kit Number	Length meters (feet)	Description
	2253H77	3.66 (12)	These cables have a 10-pin MINI connector for connecting the J-Box kits above to the user's control system. Kits include 1 cable with connector and cord grip. Cable conductors are 18-gauge wire.
	2254H77	6.1 (20)	
	2255H77	9.1 (30)	
	2256H77	15.2 (50)	

Outlet Port Pressure Monitoring Wiring Kit for DM ¹ & DM ² [®] Series Valves	Kit Number	Length meters (feet)	Description
	2251H77	1 (3.3)	Additional monitoring of downstream pressure can be accomplished by installing a pressure switch in the outlet port that is provided on the DM valve. The Outlet Port Pressure Monitoring kit can be used with one of the J-Box kits above to split one of the M12 ports on the J-Box so that a pressure switch can be wired in as well. These kits consist of one (1) port splitter (a Tee with three M12 connectors) and one (1) M12-EN cable (1 meter).



Pneumatic Valves Accessories & Options

Electrical Connectors

Connection	Electrical Connector Form	Electrical Connector Type	Cord Length meters (feet)	Cord Diameter	Model Number		
					Without Light	Lighted Connector	
						24 Volts DC	120 Volts AC
Solenoid	EN 175301-803 Form C	Prewired Connector	3 (10)	8-mm	2449K77	2450K77-W	2450K77-Z
		Connector Only	–	–	2452K77	2453K77-W	2453K77-Z
	EN 175301-803 Form A	Prewired Connector (18 gauge)	2 (6½)	6-mm	721K77	720K77-W	720K77-Z
		Prewired Connector (18 gauge)	2 (6½)	10-mm	371K77	383K77-W	383K77-Z
		Connector for threaded conduit (1/2 inch electrical conduit fittings)	–	–	723K77	724K77-W	724K77-Z
	Connector Only	–	–	937K87	936K87-W	936K87-Z	
Feedback Sensor	M8 Connector (sensing)	Prewired Connector	2 (6.5)	–	249L74	–	–



CAUTIONS: Do not use electrical connectors with surge suppressors, as this may increase valve response time when de-actuating the solenoids.

Energy Release Verification Options

May be installed on all valves with pressure sensing port, L-O-X® and L-O-X® with EEZ-ON® function, DM¹, DM^{2®} & M DM^{2®} Series, CrossMIRROR® 77 & CM Series, and SV27 & SV27 PO Check.

Pressure Switches (Electrical) for Energy Release Verification	Connection Type	Model Number	Port Thread
	EN 175301-803 Form A	586A86	1/8 NPT
	M12	1153A30	1/8 NPT
	Factory preset, 5 psi (0.3) - falling		
	May be installed on all valves with pressure sensing port. Provides means to verify the release of downstream pressure to next obstruction.		



Pop-Up (Visual) Indicator	Model Number	Port Thread	May be installed on all valves with pressure sensing port. Provides a means to verify the release of downstream pressure to next obstruction.
	988A30	1/8 NPT	



Redundant Downstream Feedback Switch for Energy Release Verification	Connection Type	Model Number	Port Thread
	EN 175301-803 Form A	RC026-13	3/8 NPT
	Factory preset, 5 psi (0.3) - falling		
	May be installed downstream on all double valves. Provides a redundant means to verify the release of downstream pressure to next obstruction.		



Energy Release Verification Options for Stainless Steel Applications

Provides a means to verify the release of downstream pressure to next obstruction, 316 Stainless Steel Body, Internals and Springs, Nitrile Seal.

Pressure Switch (Electrical)	Model Number	Threads	DPDT (Double-Pole Double-Throw) Pressure Switch Factory preset, 5 psi (0.3 bar) - falling
	1162A30	1/8 NPT	

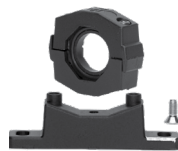


POP-UP (Visual) Indicator	Model Number	Port Thread	Visual Indicator Piston – acetal Visual Indicator Assembly – acetal with acrylic lens
	1155H30	1/8 NPT	



Mounting Accessories for Air Entry Packages

Mounting Brackets & Clamp for Module Connections	
Description	Model Number
Bracket and Screw	R-A118-103
Bracket, screw, and Clamp	R-118-105M



Port Block and End Ports	Port Size	Model Number	
		BSPF Threads	NPTF Threads
Extra Port Blocks	1/2	R-118-106-4W	R-118-106-4
Female End Ports	1/2	R-118-100-4W	R-118-100-4
	3/4	R-118-100-6W	R-118-100-6
Male End Ports	1/2	R-118-109-4FW	R-118-109-4F
	3/4	R-118-109-6FW	R-118-109-6F





Multiple Lockout Device	Model Number	356A30
	For use with any ROSS model valve with L-O-X® capability. Allows use of multiple lockout devices on a single energy isolation device.	



Pressure Gauge (Center Back Mounting)	Port Size	Model Number*	Pressure Range psig (bar)
	1/8	5400A1002	0-160 (0-11)
* Male pipe threads.			



Port size 1/8 thru 2



Port size 2 1/2

	Port Size	Thread Type	Model Number		Avg. C _v
			R Threads	NPT Threads	
Silencers	1/8	Male	D5500A1003	5500A1003	1.2
	1/4	Male	D5500A2003	5500A2003	2.1
	3/8	Male	D5500A3013	5500A3013	2.7
			D5500A3003	5500A3003	4.3
	1/2	Male	D5500A4003	5500A4003	4.7
	3/4	Male	D5500A5013	5500A5013	5.1
			D5500A5003	5500A5003	11.5
	1	Male	D5500A6003	5500A6003	14.6
	1 1/4	Male	D5500A7013	5500A7013	16.4
		Female	D5500A7001	5500A7001	24
	1 1/2	Female	D5500A8001	5500A8001	29.9
	2	Female	D5500B9001	5500B9001	34.2
	2 1/2	Female	D5500A9002	5500A9002	103.7

Reduces exhaust noise
Diffuses exhausting air
Back pressure, minimal
Typical impact noise reduction is in the 20-25 dB range
Pressure Range: 0 to 290 psig (0 to 20 bar) maximum.
Flow Media – filtered air



	Port Size	Thread Type	Model Number		Avg. C _v
			R Threads	NPT Threads	
Stainless Steel Silencers	1/4	Male	D5500B2004	5500B2004	1.44
	1/2	Male	D5500B4004	5500B4004	3.01
	1	Male	D5500B6004	5500B6004	10.41
	2	Male	D5500A9004	5500A9004	28.11

Constructed for corrosive situations, for continuous heavy-duty use
Recommended for air exhaust applications for pressures up to 125 psig (8.6 bar)
Pressure Range: 0 to 150 psig (0 to 10.3 bar) maximum
Flow Media – filtered air



	Valve Model	Basic Size	Kit Number*		Flow scfm
			R Threads	NPT Threads	
High-Flow Noise Reduction Silencers	DM ¹ & DM ²⁰ Series C	2, 4	2329H77	2324H77	800 (378)
		8	2330H77	2325H77	800 (378)
		12	2331H77	2326H77	2080 (982)
		30	2332H77	2327H77	7200 (3398)

* Kits include all plumbing required for installation.

Reduces the Exponentially Perceived Noise (EPNdB)
Improves equipment performance
Impact noise reduction in the 35–40 dB range
Recommended for air exhaust applications for pressures up to 125 psig (8.6 bar)
Pressure Range – 125 psig (8.6 bar) maximum



Hydraulic Valves Accessories & Options

Electrical Connectors

Connection	Electrical Connector Form	Electrical Connector Type	Cord Length meters (feet)	Cord Diameter	Model Number	
					Without Light	Lighted Connector 24 Volts DC
Solenoid	EN 175301-803 Form A	Prewired Connector (18 gauge)	2 (6½)	6-mm	721K77	720K77-W
		Prewired Connector (18 gauge)	2 (6½)	10-mm	371K77	383K77-W
		Connector for threaded conduit (1/2 inch electrical conduit fittings)	–	–	723K77	724K77-W
		Connector Only	–	–	937K87	936K87-W

CAUTIONS: Do not use electrical connectors with surge suppressors, as this may increase valve response time when de-actuating the solenoids.



Wiring Kits

Solenoid Connector Kits	Solenoid Connector Type	Kit Number	Length meters (feet)	Description
	EN 175301-803 Form A	2243H77	5 (16.4)	These kits include 2 cables with either EN connectors for the solenoids. All cables include cord grips.
2244H77		10 (32.8)		

Sensor Connector Kits	Sensor Connector Type	Kit Number	Connector Type	Length meters (feet)	Description
	M12 System Cables Connector - one end	2644B77	5-pin, straight A-coded	5 (16.4)	This kit includes 2 cords with female connector on one end and flying leads on the opposite end.
M12 System Cables Connector - both ends	2645B77	5-pin, straight A-coded	5 (16.4)	This kit includes 2 cords with female connector on one end and male, connector on the opposite end.	



CAUTIONS and WARNINGS

ROSS OPERATING VALVE, ROSS CONTROLS®, ROSS DECCO®, and AUTOMATIC VALVE INDUSTRIAL, collectively the “ROSS Group”.

PRE-INSTALLATION or SERVICE

1. Before servicing a valve or other pneumatic component, be sure all sources of energy are turned off, the entire pneumatic system is shut down and exhausted, and all power sources are locked out (ref: OSHA 1910.147, EN 1037).
2. All ROSS Group Products, including service kits and parts, should be installed and/or serviced only by persons having training and experience with pneumatic equipment. Because any product can be tampered with and/or need servicing after installation, persons responsible for the safety of others or the care of equipment must check ROSS Group Products on a regular basis and perform all necessary maintenance to ensure safe operating conditions.
3. All applicable instructions should be read and complied with before using any fluid power system to prevent harm to persons or equipment. In addition, overhauled or serviced valves must be functionally tested prior to installation and use. If you have any questions, call your nearest ROSS Group location.
4. Each ROSS Group Product should be used within its specification limits. In addition, use only ROSS Group components to repair ROSS Group Products.

WARNING: Failure to follow these instructions can result in personal injury and/or property damage.

FILTRATION and LUBRICATION

1. Dirt, scale, moisture, etc., are present in virtually every air system. Although some valves are more tolerant of these contaminants than others, best performance will be realized if a filter is installed to clean the air supply, thus preventing contaminants from interfering with the proper performance of the equipment. The ROSS Group recommends a filter with a 5-micron rating for normal applications.
2. All standard ROSS Group filters and lubricators with polycarbonate plastic bowls are designed for compressed air applications only. Use the metal bowl guard, where provided, to minimize danger from high pressure fragmentation in the event of bowl failure. Do not expose these products to certain fluids, such as alcohol or liquefied petroleum gas, as they can cause bowls to rupture, creating a combustible condition and hazardous leakage. Immediately replace crazed, cracked, or deteriorated bowls.
3. Only use lubricants which are compatible with materials used in the valves and other components in the system. Normally, compatible lubricants are petroleum base oils with oxidation inhibitors, an aniline point between 180°F

(82°C) and 220°F (104°C), and an ISO 32, or lighter, viscosity. Avoid oils with phosphate type additives which can harm polyurethane components, potentially leading to valve failure which risks personal injury, and/or damage to property.

WARNING: Failure to follow these instructions can result in personal injury and/or property damage.

AVOID INTAKE/EXHAUST RESTRICTION

1. Do not restrict air flow in the supply line. To do so could reduce the pressure of the supply air below minimum requirements for the valve and thereby causing erratic action.

2. Do not restrict a valve's exhaust port as this can adversely affect its operation. Exhaust silencers must be resistant to clogging and must have flow capacities at least as great as the exhaust capacities of the valves. Contamination of the silencer can result in reduced flow and increased back pressure.

WARNING: Failure to follow these instructions can result in personal injury and/or property damage.

SAFETY APPLICATIONS

1. Mechanical Power Presses and other potentially hazardous machinery using a pneumatically controlled clutch and brake mechanism must use a press control double valve with a monitoring device. A double valve without a self-contained monitoring device should be used only in conjunction with a control system which assures monitoring of the valve. All double valve installations involving hazardous applications should incorporate a monitoring system which inhibits further operation of the valve and machine in the event of a failure within the valve mechanism.

2. Safety exhaust (dump) valves without a self-contained monitoring device should be used only in conjunction with a control system which assures monitoring of the valve. All safety exhaust valve installations should incorporate a monitoring system which inhibits further operation of the valve and machine in the event of a failure within the valve mechanism.

3. Per specifications and regulations, the ROSS L-O-X® and L-O-X® with EEZ-ON®, N06 and N16 Series operation products are defined as energy isolation devices, NOT AS EMERGENCY STOP DEVICES.

WARNING: Failure to follow these instructions can result in personal injury and/or property damage.

STANDARD WARRANTY

All products sold by the ROSS Group are warranted for a one-year period [with the exception of Filters, Regulators and Lubricators (“FRLs”) which are warranted for a period of seven (7) years] from the date of purchase. All products are, during their respective warranty periods, warranted to be free of defects in material and workmanship. The ROSS Group's obligation under this warranty is limited to repair, replacement or refund of the purchase price paid for products which the ROSS Group has determined, in its sole discretion, are defective. All warranties become void if a product has been subject to misuse, misapplication, improper maintenance, modification or tampering. Products for which warranty protection is sought must be returned to the ROSS Group freight prepaid.

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Full-Service Global Locations

There are ROSS Distributors Throughout the World

To meet your requirements across the globe, ROSS distributors are located throughout the world. Through ROSS or its distributors, guidance is available for the selection of ROSS products, both for those using pneumatic or hydraulic components for the first time and those designing complex systems.

This catalog presents an overview of the ROSS Safety products. Other literature is available for engineering, maintenance, and service requirements.

If you need products or specifications not shown in this document, please visit ROSS' website, contact ROSS or your ROSS distributor. The ROSS Support Team will be happy to assist you in selecting the best product for your application.

For a current list of countries and local distributors, visit ROSS' website at rosscontrols.com.